WHAT IS CLAIMED IS:

1. A method of reading fluorescence signals from an array of chemical moieties, comprising:

illuminating multiple locations on the array and detecting any resulting fluorescence, wherein a later illuminated location is spatially closer to an earlier illuminated location than is a temporally intervening illuminated location lying on a same line as the later and earlier illuminated locations.

2. A method according to claim 1 wherein the chemical moieties are polynucleotides.

3. A method according to claim 2 wherein the chemical moieties are different DNA sequences.

4. A method according to claim 1 wherein at least one later illuminated location is interleaved between previously illuminated locations.

5. A method according to claim 4 additionally comprising selecting a time between illuminating a location and illuminating a closest later illuminated location based on a saturation characteristic of a fluorophore producing the fluorescence.

6. A method of reading fluorescence signals from an array of chemical moieties, comprising:

illuminating multiple paths across the array and detecting any resulting fluorescence, wherein the paths extend in a same lengthwise direction and are spaced from one another in a crosswise direction, and the spatial sequence of the paths does not correspond to their temporal sequence.

7. A method according to claim 6 wherein the paths are parallel lines.

8. A method of reading fluorescence signals from an array of chemical moieties, comprising:

illuminating multiple paths across the array and detecting any resulting fluorescence, wherein the paths extend in a same lengthwise direction and are spaced from one another in a crosswise direction, and at least one later illuminated path is closer to a an earlier illuminated path than a temporally intervening illuminated path.

9. A method according to claim 8 wherein the at least one later illuminated path is interleaved between previously illuminated paths.

10. A method according to claim 9 wherein multiple later illuminated paths are interleaved between previously illuminated paths.

11. A method according to claim 10 wherein the later illuminated paths are illuminated in a timewise sequence different from their spatial sequence such that a spatially nearest neighbor in a later illuminated path is not a timewise nearest neighbor.

12. A method according to claim 11 wherein the spacing between the nearest paths of the earlier, temporally intervening, and interleaved paths are equal.

13. A method of reading fluorescence signals from an array of chemical moieties, comprising:

illuminating multiple parallel lines across the array and detecting any resulting fluorescence, wherein a later illuminated line is closer to an earlier illuminated line than a temporally intervening illuminated line.

14. A method according to claim 13 wherein multiple later illuminated lines are interleaved between previously illuminated lines.

15. A method according to claim 14 wherein the spacing between nearest lines of the earlier, temporally intervening and interleaved lines is equal.

16. A method of claim 13 additionally comprising repeating the illuminating in one or more further cycles, and wherein timewise successively illuminated lines of a cycle are illuminated by scanning a light beam in opposite directions.

17. A method according to claim 13 additionally comprising selecting a time between illuminating a line and illuminating a spatially closest later illuminated line based on a saturation characteristic of a fluorophore producing the fluorescence.

18. A method according to claim 13 additionally comprising selecting a time between illuminating a line and illuminating a spatially closest later illuminated line based on an identifier associated with the array.

19. A method according to claim 18 wherein the identifier is carried on an array substrate or a housing for the array.

20. A method according to claim 13 additionally comprising selecting a time between illuminating a line and illuminating a spatially closest later illuminated line based on a spatial distribution of the illumination and a pixel size during the detecting.

21. An apparatus for reading fluorescence signals from an array of chemical moieties, comprising:

(a) an illumination source to cause fluorescence of the chemical moieties;

(b) a scan system to direct the illumination source to different locations on the array; and

(c) a detector to detect any resulting fluorescence from the array;

(c) a processor which controls the scan system such that multiple locations on the array are illuminated and any resulting fluorescence detected, wherein a later illuminated location is spatially closer to an earlier illuminated location than is a temporally intervening illuminated location lying on a same line as the later and earlier illuminated locations.

22. An apparatus according to claim 21 wherein at least one later illuminated location is interleaved between previously illuminated locations.

23. An apparatus according to claim 21 wherein the processor additionally selects a time between illuminating a line and illuminating a spatially closest later illuminated line based on a saturation characteristic of a fluorophore producing the fluorescence

24. An apparatus for reading fluorescence signals from an array of chemical moieties, comprising:

(a) an illumination source to cause fluorescence of the chemical moieties;

(b) a scan system to direct the illumination source to different locations on the array; and

(c) a detector to detect any resulting fluorescence;

(c) a processor which controls the scan system such that multiple paths across the array are illuminated and any resulting fluorescence detected, wherein the paths extend in a same lengthwise direction and are spaced from one another in a crosswise direction, and the spatial sequence of the paths does not correspond to their temporal sequence.

25. An apparatus according to claim 24 wherein at least one later illuminated path is closer to a an earlier illuminated path than a temporally intervening illuminated path.

26. An apparatus according to claim 25 wherein timewise successively illuminated paths are equally spaced crosswise from their respective closest later illuminated paths.

27. An apparatus according to claim 25 wherein at least one later illuminated path is interleaved between previously illuminated paths.

28. An apparatus according to claim 27 wherein multiple later illuminated paths are interleaved between previously illuminated paths.

29. An apparatus for reading fluorescence signals from an array of chemical moieties, comprising:

(a) an illumination source to cause fluorescence of the chemical moieties;

(b) a scan system to direct the illumination source to different locations on the array; and

(c) a detector to detect any resulting fluorescence from the array;

(c) a processor which controls the scan system such that multiple parallel lines across the array are illuminated and any resulting fluorescence detected, wherein a later illuminated line is closer to an earlier illuminated line than a temporally intervening illuminated line.

30. An apparatus according to claim 29 wherein multiple later illuminated lines are interleaved between previously illuminated lines.

31. An apparatus according to claim 30 wherein the spacing between the interleaved and previously illuminated lines is equal.

32. An apparatus of claim 29 additionally comprising repeating the illuminating in one or more further cycles, and wherein timewise successively illuminated lines of a cycle are illuminated by scanning a light beam in opposite directions.

33. An apparatus according to claim 29 wherein the processor additionally selects a time between illuminating a line and illuminating a spatially closest later illuminated line based on a saturation characteristic of a fluorophore producing the fluorescence.

34. An apparatus according to claim 29 wherein the processor additionally selects a time between illuminating a line and illuminating a spatially closest later illuminated line based on a spatial distribution of the illumination and a pixel size during the detecting.

35. A computer program product, comprising: a computer readable storage medium having a computer program stored thereon which, when loaded into a computer communicating with an apparatus for reading fluorescence signals from an array of chemical moieties, performs the steps of:

illuminating multiple locations on the array and detecting any resulting fluorescence, wherein a later illuminated location is spatially closer to an earlier illuminated location than is a temporally intervening illuminated location lying on a same line as the later and earlier illuminated locations.

36. A computer program product according to claim 35 wherein at least one subsequently illuminated location is interleaved between previously illuminated locations.

37. A method according to claim 36 additionally comprising selecting a time between illuminating a location and illuminating a spatially closest later illuminated location based on a saturation characteristic of a fluorophore producing the fluorescence.

38. A computer program product, comprising: a computer readable storage medium having a computer program stored thereon which, when loaded into a computer communicating with an apparatus for reading fluorescence signals from an array of chemical moieties, performs the steps of:

illuminating multiple parallel lines across the array and detecting any resulting fluorescence from the array, wherein a later illuminated line is closer to an earlier illuminated line than a temporally intervening illuminated line.

39. A method according to claim 38 wherein each line comprises a series of points illuminated sequentially by moving an illuminating beam along the line.